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09/309,894 05/11/99 TAKEBE

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WM31/0226

EXAMINER

DASTOURI, M	
ART UNIT	PAPER NUMBER

2623
DATE MAILED:

4
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/309,894

Applicant(s)

Takebe et al

Examiner

Mehrdad Dastouri

Group Art Unit

2623



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire Three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-13 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-13 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2623

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 7, 8 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lyon (U.S. 5,675,665).

Regarding Claim 1, Lyon discloses a word recognizing apparatus, comprising:

listing means for storing a list of at least one word (Figure 1, lexicon memory 30, word memory 32; Column 4, Lines 19-22; Column 4, Lines 63-65);

dictionary means for storing feature amounts of a plurality of characters (Figures 1 and 5-7, bounds measurement memory 36, bounds model memory 38; Column 10, Lines 39-67, Column 11, Lines 1-25. Based on the feature amounts extracted from the training word characters, feature amounts of plurality of model characters are extracted and stored in bounds model memory 38 as depicted in Figures 6 and 7.);

generating means for generating a feature amount of a word stored in said listing means using the feature amounts of characters stored in said dictionary means (Column 14, Lines 32-57. After completion of feature amount extraction of the first training word and generation of bound

Art Unit: 2623

models, the bounds evaluation unit 26 generates feature amounts of a next word structure 60 using feature amounts of characters stored in bounds model memory 38.); collating means for collating the generated feature amount of the word with a feature amount of a recognition target and outputting a recognition result (Figures 11-13; Column 18, Lines 57-67, Column 19, Lines 1-61. The feature amounts of a recognition target (e.g., “fog”) will be precisely compared with the feature amount of training word characters stored in bounds model memory 38.).

Regarding Claim 5, Lyon further discloses the word recognizing apparatus according to Claim 1, wherein said generating means generates the feature amount of the word by using feature amounts of a plurality of characters (Figures 2, 5A-B, 6 and 7. Feature amounts of the word “feed” is generated by using feature amounts of plurality of characters “f”, “e” and “d”).

Regarding Claim 7, Lyon further discloses the word recognizing apparatus according to Claim 1, wherein said collating means performs a non-linear matching of the feature amount of the word and the feature amount of the recognition target, and calculates a degree of similarity between the feature amount of the word and feature amount of the recognition target (Figures 8-10; Column 16, Lines 45-67, Column 17, Lines 1-19. The bounds evaluation unit 26 performs the comparison operation by generating a set of error values E1-E8 that indicates the difference between the recognition target “fog” and character bound models.).

Art Unit: 2623

Regarding Claim 8, Lyon further discloses the word recognizing apparatus according to Claim 1, wherein said listing means stores a list which has a high possibility of containing a word corresponding to the recognition target (Column 4, Lines 46-61).

With regards to Claim 13, arguments analogous to those presented for Claim 1 are applicable to Claim 13.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakao et al (U.S. 6,064,769).

Regarding Claim 9, Nakao et al disclose a word recognizing apparatus, comprising:
generating means for dynamically generating a feature amount of a word using feature amounts of characters (Figures 46A-B; Column 35, Lines 40-67. Feature amounts of the words "Fig.1" and "Sample" are generated using feature amounts of their characters. Generating feature amounts of characters are depicted in Figures 5A-B.);
collating means for collating the generated feature amount of the word with a feature amount of a recognition target, and for outputting a recognition result (Figures 47-49; Column 36, Lines 1-33).

Art Unit: 2623

With regards to Claims 10-12, arguments analogous to those presented for Claim 9 are applicable to Claims 10-12.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (U.S. 5,675,665).

Regarding Claim 2, Lyon discloses the word recognizing apparatus according to Claim 1, wherein said collating means includes a memory means which stores the feature amounts of the word (Figure 1, bounds measurement memory 36, bounds model memory 38). Lyon et al does not explicitly disclose releasing the memory means when a collation of the feature amount of the word is completed, and storing a feature amount of the next word. Utilizing a region of memory (buffer) for using as an intermediate repository in which data is temporarily held while a specific instruction is being executed is well known in the art (Official Notice). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon invention to incorporate releasing the memory location when a collation of the feature amount of

Art Unit: 2623

the word is completed, and storing a feature amount of the next word in that location because it is a well known procedure routinely implemented in the art.

7. Claims 3, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (U.S. 5,675,665) in view of Kimura et al (Pattern recognition Journal; 7; Improvement of Handwritten Japanese Character Recognition Using Weighted Direction Code Histogram).

Regarding Claim 3, Lyon further discloses the word recognizing apparatus according to Claim 1, further comprising:
inputting means for inputting an image as the recognition target (Figure 1, Input device 14). Lyon does not disclose further limitations of Claim 3. Kimura et al disclose a handwritten character recognition system comprising extracting means for performing a one-dimensional gradating conversion in a direction perpendicular to a connecting direction of characters for a direction code histogram of a contour line in each of the plurality of small areas in an inputted image and extracting a direction code histogram series obtained from a conversion result as the feature amount of the recognition target (Figure 2; Page 1330, Section 2). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon invention according to the teaching of Kimura et al to extract a direction code histogram series obtained from a conversion result as the feature amount of the recognition target because it will increase the accuracy and improve the confidence level of the character recognition system.

Regarding Claim 6, Lyon does not disclose further limitations of Claim 6. Kimura et al disclose a handwritten character recognition system comprising generating means generates a new

Art Unit: 2623

direction code histogram series by arranging a plurality of directions code histograms series corresponding to the feature amounts of characters composing the word and designating a generated direction code histogram series as the feature amount of the word (Figure 2; Page 1330, Section 2). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon invention according to the teaching of Kimura et al to extract a direction code histogram series obtained from a conversion result as the feature amount of the recognition target because it will increase the accuracy and improve the confidence level of the character recognition system.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (U.S. 5,675,665) further in view of Kimura et al (Pattern recognition Journal; 7; Improvement of Handwritten Japanese Character Recognition Using Weighted Direction Code Histogram) and Tsuruoka et al (IEEE Paper ISBN: 0-8186-4960-7; Segmentation and Recognition for Handwritten 2-Letter State Names).

Regarding Claim 4, neither Lyon nor Kimura et al disclose further limitations of Claim 4. Tsuruoka et al disclose a segmentation algorithm for recognition of handwritten characters comprising extracting means for dividing a length of the inputted image in the direction perpendicular to the connecting direction of characters by a predetermined integer and divides the image into the small areas with an obtained quotient as a size of the small areas (Page 816, Section 3.2. The splitting algorithm based on Criterion 2 will identify the optimum location for splitting (dividing) the image into small areas. This criterion performs an accurate dividing of

Art Unit: 2623

characters including narrow width characters such as "I"). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lyon and Kimura et al combination according to the teaching of Tsuruoka et al to divide a length of the inputted image in the direction perpendicular to the connecting direction of characters by a predetermined integer and divide the image into the small areas with an obtained quotient as a size of the small areas because it will improve the accuracy of the character recognition system for narrow width characters.

Other prior art cited

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,182,777 to Nakayama et al is cited for a method for extracting feature quantities of a character.

IEEE Paper ISBN: 0-8186-7128-9 to Kimura et al is cited for handwritten ZIP code recognition using lexicon free recognition algorithm.

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438.

Art Unit: 2623

The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached at (703)308-6604.

Any response to this action should be mailed to:

Commissioner for Patents
Washington, D.C. 20231

or faxed to:


(703) 308-9051, or (703) 308-9052 (for *formal* communications; please mark
"EXPEDITED PROCEDURE")


or:

(703) 306-5406 (for *informal* or *draft* communications, please label
"PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703)305-3900.


Mehrdad Dastouri
Patent Examiner
Group Art Unit 2623
February 22, 2001


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